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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/782,488

02/18/2004

Andrew L. Van Brocklin

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EXAMINER

DETSCHER, MARISSA

ART UNIT

PAPER NUMBER

2877

DATE MAILED: 02/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/782,488

Applicant(s)

VAN BROCKLIN ET AL. 

Examiner

Marissa J. Detschel

Art Unit

2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 18 and 31 is/are rejected.
- 7) ☒ Claim(s) 1 and 3-34 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>02/18/2004</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Information Disclosure Statement***

The information disclosure statement filed on February 18, 2004, has been fully considered by the examiner.

### ***Specification***

Where applicant acts as his or her own lexicographer to specifically define a term of a claim contrary to its ordinary meaning, the written description must clearly redefine the claim term and set forth the uncommon definition so as to put one reasonably skilled in the art on notice that the applicant intended to so redefine that claim term. *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1357, 52 USPQ2d 1029, 1033 (Fed. Cir. 1999).

The term "diffractive" in claims 1, 4, 8, 10, 13, 16-19, 23, 26, and 31 and throughout the Applicant's disclosure to describe a light device (DLD) is used by the Applicant to mean "producing color by controlling the gap size between opposing surfaces of a device", while the accepted meaning is "change in the directions and intensities of a group of waves after passing by an obstacle or through an aperture whose size is approximately the same as the wavelength of the waves" (*The American Heritage Dictionary of the English Language*, 4<sup>th</sup> Ed., 2004). Furthermore, an example of a diffractive light device is a diffraction grating, and that is defined as "any arrangement which imposes on an incident wave a periodic variation of amplitude or phase, or both" (Born, Max and Wolf, Emil, *Principles of Optics*. 7<sup>th</sup> Ed., copyright 1999

Art Unit: 2877

by Pergamon Press Ltd., London, page 446) The term is indefinite because the specification does not clearly redefine the term.

Upon the examination set forth in this office action, the Examiner took the diffractive light device or DLD to mean a device that produces color by controlling the gap size between opposing surfaces of the device, as set forth in the claims and the Applicant's disclosure.

Claims 5, 8, 25, 30, 31, and 34 are objected to because of the following informalities:

As to claim 5, the limitation "said static lookup table" is presented in line 2 of this claim, and there is insufficient antecedent basis for this. Examiner suggests making claim 5 dependent on either claim 3 or 4.

As to claim 8, the limitation "said control circuit" appears in line 14 of this claim, and there is insufficient antecedent basis for this.

As to claims 25 and 30, these claims end with the phrase "substantially continuously," and it is uncertain as to how a method can be carried on "substantially continuously." Examiner suggests changing this phrase to "continuously."

As to claim 31, a ";" should be inserted at the end of line 2.

As to claim 34, the claim reads "The system of claim 32, and further comprising means for converting adjusting a human visible array based on values stored in said means for storing said for storing said designer-specified gap and for storing said voltage correction value." The phrase "comprising means for converting adjusting a human visible array" contains two actions after "means for." Examiner suggests making

Art Unit: 2877

this phrase "comprising means for adjusting a human visible array." Furthermore, one of the "for storing said" should be removed in the phrase "said means for storing said for storing said."

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1, 2, 18, and 31 are rejected under 35 U.S.C. 102(a) as being anticipated by Tucker et al. (USPN 6,538,748).

In regards to claim 1, Tucker discloses a feedback-control circuit for calibration of a device comprising:

**at least one diffractive light device (DLD) having a gap distance defined by opposing plates** (13, 14, 213, 214) (column 3, lines 18-23);

The diffractive light device is understood by the Examiner to be any optical device having a gap distance defined by opposing plates. A Fabry Perot filter is an example of an optical device having a gap distance defined by opposing plates.

**at least one sensor configured to convert light modulated by said DLD device into a light signal indicative of said gap** (column 1, lines 22-29 and column 5, line 59 to column 6, line 8);

The spacing between the opposing plates of a Fabry-Perot device is directly related to the device's resonant frequency (i.e. wavelength). The controller of Tucker's laser feedback circuit uses a method to determine the difference in wavelength between a reference laser and Fabry-Perot device. The wavelength measurement from the Fabry-Perot device is a direct measurement of the spacing between the opposing plates, and, thus, the controller of Tucker is configured to convert the light modulated by the Fabry-Perot into a light signal indicative of the gap spacing.

**a controller configured to calculate a voltage correction value based on a difference between said gap as indicated by said light signal and a designer-specified gap value and being further configured to apply a corrected voltage corresponding to said voltage correction value to said DLD device** (column 5, line 59 to column 6, line 8).

The wavelength of the reference laser in Tucker's device represents a designer-specified gap value, and the voltage correction value is indicated by the difference in wavelength between the Fabry-Perot device (i.e. gap as indicated by said light signal)

Art Unit: 2877

and a reference laser wavelength (i.e. designer specified gap value, since wavelength value is indicative of a gap value in a Fabry-Perot device, as set forth above).

Regarding claim 2, the sensor of Tucker is a photodiode. It would be inherent to use a photodiode in order to take wavelength measurements of the reference laser and the Fabry-Perot tunable laser.

In regards to claim 18, Tucker discloses a method of calibrating a diffractive light device (DLD), comprising:

**placing first and second opposing plates in a separated position defined by an actual gap distance** (column 3, lines 18-23);

The diffractive light device is understood by the Examiner to be any optical device having a gap distance defined by opposing plates. A Fabry Perot filter is an example of an optical device having a gap distance defined by opposing plates.

**directing light onto said DLD device to modulate the light** (column 5, lines 40-43);

A Fabry-Perot device can be converted to a tunable laser by introducing light from a source into the device. Due to the design of the Fabry-Perot device, the light is modulated based on the resonant frequency of the Fabry-Perot cavity as indicated by the spacing in the cavity.

**converting modulated light to an assumed gap value** (column 1, lines 22-29 and column 5, line 59 to column 6, line 8);

The spacing between the opposing plates of a Fabry-Perot device is directly related the device's resonant frequency (i.e. wavelength). The controller of Tucker's laser feedback circuit uses a method to determine the difference in wavelength between a reference laser and Fabry-Perot device. The wavelength measurement from the Fabry-Perot device is a direct measurement of the spacing between the opposing plates, and, thus, the controller of Tucker is configured to convert the light modulated by the Fabry-Perot into a light signal indicative of the gap spacing.

**comparing said assumed gap value to a designer specified gap value; and  
adjusting said assumed gap distance by a distance proportional to a  
difference between said assumed gap value and said designer-specified gap  
value** (column 5, line 59 to column 6, line 8).

The wavelength of the reference laser in Tucker's device represents a designer-specified gap value, and the voltage correction value is indicated by the difference in wavelength between the Fabry-Perot device (i.e. gap as indicated by said light signal) and a reference laser wavelength (i.e. designer specified gap value, since wavelength value is indicative of a gap value in a Fabry-Perot device, as set forth above).



In regards to claim 31, Tucker discloses a DLD system comprising:

**means for diffracting light based on actual gap distance** (column 3, lines 18-23);

The diffractive light device is understood by the Examiner to be any optical device having a gap distance defined by opposing plates. A Fabry Perot filter is an example of an optical device having a gap distance defined by opposing plates.

**means for converting detected light values to assume gap values** (column 1, lines 22-29 and column 5, line 59 to column 6, line 8);

The spacing between the opposing plates of a Fabry-Perot device is directly related the device's resonant frequency (i.e. wavelength). The controller of Tucker's laser feedback circuit uses a method to determine the difference in wavelength between a reference laser and Fabry-Perot device. The wavelength measurement from the Fabry-Perot device is a direct measurement of the spacing between the opposing plates, and, thus, the controller of Tucker is configured to convert the light modulated by the Fabry-Perot into a light signal indicative of the gap spacing.

**means for comparing said assumed gap values to designer-specified gap values; and**

**means for adjusting said actual gap distance to minimize the distance between said assume gap values and said designer specified gap values** (column 5, line 59 to column 6, line 8).

The wavelength of the reference laser in Tucker's device represents a designer-specified gap value, and the voltage correction value is indicated by the difference in wavelength between the Fabry-Perot device (i.e. gap as indicated by said light signal) and a reference laser wavelength (i.e. designer specified gap value, since wavelength value is indicative of a gap value in a Fabry-Perot device, as set forth above).

***Allowable Subject Matter***

Claim 3, 6, 7, 20-22, and 24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 8, 10, 13, 16, 17, 23, 26, and 30 are objected to based on the minor informalities presented in this office action, but would be allowable if rewritten to overcome these minor informalities.

Claims 9, 11, and 12, which are dependent from claim 8, are also objected to based on the minor informalities of claim 8, but would be allowable if the minor informalities of claim 8 are overcome.

Claims 14 and 15, which are dependent from claim 12, are also objected to based on the minor informalities of claim 12, but would be allowable if the minor informalities of claim 12 are overcome.

Claims 27-29, which are dependent from claim 26, are also objected to based on the minor informalities of claim 26, but would be allowable if the minor informalities of claim 26 are overcome.

Claim 4, 5, 19, 25, and 32-34 are objected to as being dependent upon a rejected base claim and based on the minor informalities as presented in this office action, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and, furthermore, rewritten to overcome these minor informalities.

The following is a statement of reasons for the indication of allowable subject matter:

As to claim 3, the prior art of record, taken alone or in combination, fails to disclose or render obvious a controller in a feedback-control circuit for calibration of a diffractive light device comprising a gap value converter having an analog-to-digital converter and a static lookup table, in combination with the rest of the limitations of claim 3.

As to claim 4, the prior art of record, taken alone or in combination, fails to disclose or render obvious a controller in a feedback-control circuit for calibration of a diffractive light device comprising an analog-to-digital converter, a color vector

Art Unit: 2877

generator, and a static lookup table, in combination with the rest of the limitations of claim 4.

As to claim 5, the prior art of record, taken alone or in combination, fails to disclose or render obvious a controller in a feedback-control circuit for calibration of a diffractive light device comprising an amplifier coupled to a static lookup table, in combination with the rest of the limitations of claim 5.

As to claim 8, the prior art of record, taken alone or in combination, fails to disclose or render obvious a feedback-control circuit for calibration of a set of diffractive light devices comprising a designer-specified gap value table with a stored plurality of designer-specified gap values corresponding to gap distances in the diffractive light devices, in combination with the rest of the limitations of claim 8.

As to claim 13, the prior art of record, taken alone or in combination, fails to disclose or render obvious a diffractive light device system comprising a feedback-control circuit that includes a calibration array with an operational lookup table coupled to the circuit that couples designer-specified gap values and voltage correction values, and stores these values, in combination with the rest of the limitations of claim 13.

As to claim 19, the prior art of record, taken alone or in combination, fails to disclose or render obvious placing first and second plates in a separated position based on an initial voltage corresponding to a designer-specified gap value in a method for calibrating a diffractive light device, in combination with the rest of the limitations of claim 19.

As to claim 20, the prior art of record, taken alone or in combination, fails to disclose or render obvious the method of calibrating a diffractive light device comprising directing light modulated by a diffractive light device through a color filter and onto a sensor, and converting the sensor output into a digital signal representing an assumed gap value for the device, in combination with the rest of the limitations of claim 20.

As to claim 26, the prior art of record, taken alone or in combination, fails to disclose or render obvious the method of storing and correlating voltage correction values and designer-specified gap functions on an operational lookup table in a method for calibrating a diffractive light device array, in combination with the rest of the limitations of claim 26.

As to claim 32, the prior art of record, taken alone or in combination, fails to disclose or render obvious a diffractive light device system comprising means for storing a designer-specified gap value and a voltage correction value based on the difference between a designer-specified gap value and an assumed gap value, in combination with the rest of the limitations of claim 32.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marissa J. Detschel whose telephone number is 571-272-2716. The examiner can normally be reached on M-F 8:30am-5:00pm.

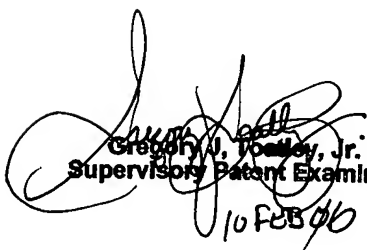
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on 571-272-2059. The fax phone

Art Unit: 2877

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Marissa J Detschel  
February 8, 2006  
MJD



Gregory J. Tooley, Jr.  
Supervisory Patent Examiner  
10 FEB 06